

What is Claimed is:

1. A multi-type air conditioner comprising:

an outdoor unit installed in an outdoor, including a compressor, a refrigerant flow controlling part connected to a discharge end of the compressor for guiding the refrigerant proper to operation conditions selectively, and an outdoor heat exchanger connected to the refrigerant flow controlling part;

a plurality of indoor units each installed in a room and having an indoor heat exchanger and an electronic expansion valve having one end connected to one end of the indoor heat exchanger;

a plurality of, at least two, distributors between the outdoor unit and the plurality of indoor units for improving installation freedom of the plurality of indoor units, selectively guiding refrigerant from the outdoor unit to the plurality of indoor units proper to operation conditions, and guiding the refrigerant passed through the indoor units to the outdoor unit again, and

a device for shutting off introduction of the refrigerant into the distributors connected to inoperative indoor units.

2. The multi-type air conditioner as claimed in claim 1, wherein the refrigerant introduction shutoff device is an ON/OFF valve.

3. The multi-type air conditioner as claimed in claim 1, wherein the plurality of distributors include supercooling devices respectively on pipelines high pressure liquid refrigerant flows therein for supercooling the high pressure liquid refrigerant.

4. The multi-type air conditioner as claimed in claim 3, wherein the supercooling device includes;

a leading pipeline branched from a fore end of a pipeline in one of the plurality of distributors the high pressure liquid refrigerant flows therethrough,

an expansion means on the leading pipeline for expanding the high pressure liquid refrigerant into low pressure gas refrigerant,

first leading branch pipelines having one ends respectively branched from the leading pipeline as many as a number of the plurality of distributors,

a heat exchanger part in each of the distributor having one end connected to the other end of the first leading pipeline for sustaining a supercooled state of refrigerant in the high pressure liquid refrigerant connection pipeline, and

a second leading branch pipeline for guiding low pressure gas refrigerant passed through the heat exchanger in each of the distributors to the low pressure gas refrigerant connection pipeline to be introduced into the compressor.

5. The multi-type air conditioner as claimed in claim 4, wherein the supercooling device further includes a refrigerant shutoff part on each of the first leading branch pipeline.

6. The multi-type air conditioner as claimed in claim 5, wherein the refrigerant shutoff part is an ON/OFF valve for opening/closing proper to operation conditions.

7. The multi-type air conditioner as claimed in claim 4, wherein the heat exchanger part is in contact with pipelines the high pressure liquid refrigerant flows therein.

8. The multi-type air conditioner as claimed in claim 7, wherein the heat exchanger part includes a pipeline passed through an inside of the pipeline the high pressure liquid refrigerant flows therein.

9. The multi-type air conditioner as claimed in claim 4, wherein the expansion means is an electronic expansion valve.

10. The multi-type air conditioner as claimed in claim 1, wherein the outdoor unit further includes;

a first connection pipeline having one end connected to a discharge end of the compressor and the other end connected to the distributor with the refrigerant flow controlling part and the outdoor heat exchanger connected in succession between the two ends,

a second connection pipeline connected to the first connection pipeline connected between the refrigerant flow controlling part and the discharge end of the compressor, for guiding compressed refrigerant to the distributors directly, and

a third connection pipeline connected between the suction end of the compressor and the distributors, and has a branch pipeline connected to one end of the refrigerant flow controlling part, for guiding low pressure gas refrigerant to the compressor.

11. The multi-type air conditioner as claimed in claim 10, wherein the distributor includes;

a guide piping system for guiding the refrigerant introduced thereto through the first connection pipeline or the second connection pipeline in the outdoor unit to the indoor units, and the refrigerant from the indoor units to the first connection pipeline or to the third

connection pipeline in the outdoor unit proper to operation conditions, and

a valve bank on the guide piping system for controlling refrigerant flow such that the refrigerant flows in/out of the indoor units, selectively proper to operation conditions.

12. The multi-type air conditioner as claimed in claim 11, wherein the guide piping system includes;

a high pressure liquid refrigerant connection pipeline having one end connected to the first connection pipeline in the outdoor unit,

high pressure liquid refrigerant branch pipelines having one ends branched from the high pressure liquid refrigerant connection pipeline as many as a number of the indoor units and the other ends connected to the other ends of the indoor electronic expansion valves respectively,

a high pressure gas refrigerant connection pipeline having one end connected to the second connection pipeline in the outdoor unit directly,

high pressure gas refrigerant branch pipelines having one ends branched from the high pressure gas refrigerant connection pipeline as many as the number of the indoor units, and the other ends directly connected to the other ends of the indoor heat exchangers of respective indoor units respectively,

a low pressure gas refrigerant connection pipeline having one end connected to the third connection pipeline in the outdoor unit directly, and

low pressure gas refrigerant branch pipelines having one ends branched from the low pressure gas refrigerant connection pipeline as many as the number of indoor units, and the other ends connected to the other ends of the indoor heat exchangers of the respective indoor units the high pressure gas refrigerant branch pipelines connected thereto, respectively.

13. The multi-type air conditioner as claimed in claim 12, wherein the valve bank includes;

selection valves on the high pressure gas refrigerant branch pipelines and the low pressure gas refrigerant branch pipelines for closing the valves on the high pressure gas refrigerant branch pipelines and opening the valves on the low pressure gas refrigerant branch pipelines in a case of room cooling, and opening/closing the valves in an opposite manner in a case of room heating, for controlling refrigerant flow.

14. A multi-type air conditioner comprising:

an outdoor unit installed in an outdoor, including a compressor, a four way valve connected to a discharge end of the compressor for guiding the refrigerant proper to operation conditions selectively, and an outdoor heat exchanger connected to the four way valve;

a plurality of indoor units each installed in a room and having an indoor heat exchanger and an electronic expansion valve having one end connected to one end of the indoor heat exchanger;

a plurality of distributors between the outdoor unit and the plurality of indoor units for improving installation freedom of the plurality of indoor units, selectively guiding refrigerant from the outdoor unit to the plurality of indoor units proper to operation conditions, and guiding the refrigerant passed through the indoor units to the outdoor unit again, each of the distributors having a device on a pipeline the high pressure liquid refrigerant flows therein for sustaining a supercooled state of the high pressure liquid refrigerant, and

an ON/OFF valve for shutting off introduction of the refrigerant into the distributors connected to inoperative indoor units.

15. The multi-type air conditioner as claimed in claim 14, wherein the supercooling device includes;

a leading pipeline branched from a fore end of a pipeline in one of the plurality of distributors the high pressure liquid refrigerant flows therethrough,

an expansion means on the leading pipeline for expanding the high pressure liquid refrigerant into low pressure gas refrigerant,

first leading branch pipelines having one ends respectively branched from the leading pipeline as many as a number of the plurality of distributors,

a heat exchanger part in each of the distributor having one end connected to the other end of the first leading pipeline for sustaining a supercooled state of refrigerant in the high pressure liquid refrigerant connection pipeline, and

a second leading branch pipeline for guiding low pressure gas refrigerant passed through the heat exchanger in each of the distributors to the low pressure gas refrigerant connection pipeline to be introduced into the compressor.

16. The multi-type air conditioner as claimed in claim 15, wherein the supercooling device further includes an ON/OFF valve on the first leading branch pipeline for shutting off the refrigerant.

17. The multi-type air conditioner as claimed in claim 16, wherein the heat exchanger part is a tubular pipeline passed through an axis direction of an inside of the pipeline the high pressure liquid refrigerant flows therein.